ABSTRACT

A method of modeling and simulating the impact of global variation and local mismatch on the performance of integrated circuits includes the step of converting, if necessary, the device mismatch model at the device performance level into a model suitable for circuit simulation; for example, at the SPICE parameter level. Second, if global variation is provided, performing a first level principal-component or principal-factor decomposition and screening to represent the global variation. If no global variation is provided, this decomposition is performed for the local variation only. Third, performing a second level principal-component or principal-factor decomposition and screening for each independent factor identified in the second step to represent the local variation and reduce its dimensionality. If no global variation is provided in the initial model before local variation is applied, this step does not apply. Fourth, performing statistical circuit simulation and analysis with the combined set of independent factors that result from the second and/or third steps to estimate the impact of global and local variation jointly and/or separately on the circuit of interest.

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